MJ2418 Sustainable Energy and Environment 5.0 credits

Hållbar energi och hållbar miljö

This is a translation of the Swedish, legally binding, course syllabus.

If the course is discontinued, students may request to be examined during the following two academic years

Establishment

Course syllabus for MJ2418 valid from Autumn 2015

Grading scale

A, B, C, D, E, FX, F

Education cycle

Second cycle

Main field of study

Environmental Engineering,Mechanical Engineering

Specific prerequisites

BSc or the equivalent

Language of instruction

The language of instruction is specified in the course offering information in the course catalogue.

Intended learning outcomes

After passing the course, the student should be able to: â€¢ Distinguish between the concepts of using energy resources and energy efficiency when it comes to sustainable development and the connection between thermodynamics, science and environmental impact.

â€¢ Identify pollution sources and the effects on the environment that is caused by power systems and their environmental impact.

â€¢ Identify and assess the factors that decide transport and scattering of air pollutions.

â€¢ Demonstrate knowledge and understanding of the aids that are available for assessing emissions, with an emphasis on the climate impact and life-cycle analysis.

â€¢ Identify processes and systems to prevent contaminants and demonstrate knowledge of and understanding of the treatment systems used to decrease the pollution levels.

Course contents

1. Sustainable energy and environment

2. Water, land and air pollutions

3. Effects of air pollutions

4. Atmospheric dispersion

5. Pollution inventory and emission carbon footprint (LCA and LCC)

6. Treatment and monitoring systems for particles and gas, separation and storage of carbon dioxide (CCS)

7. Technical corrections

8. Handling of radioactive waste

Course literature

- Sioshansi, F.P. (2011). Energy, Sustainability and the Environment: Technology, Incentives, Behaviour. Ed. Elsevier, Amsterdam.

- Ibrahim Dincer and Marc A. Rosen. (2007). Exergy: Energy, Environment and Sustainable Development. Elsevier Linacre House, Jordan Hill, Oxford OX2 8DP, UK.

- James A. Fay and Dan S. Golomb. (2012). Energy and the Environment. Published by Oxford University Press, Inc. 198 Madison Avenue, New York, New York.

- Abhishek Tiwary and Jeremy Colls. (2010). Air Pollution: Measurement, modelling and mitigation Third edition. Routledge Taylor & Francis Group, 270 Madison Avenue, New York, NY.

• Hill, M.K. (2004). Understanding Environmental Pollution. Cambridge University Press, The Edinburgh Building, Cambridge cb2 2ru, UK.

Examination

Based on recommendation from KTH's coordinator for disabilities, the examiner will decide how to adapt an examination for students with documented disability.

The examiner may apply another examination format when re-examining individual students.

Ethical approach

- All members of a group are responsible for the group's work.
- In any assessment, every student shall honestly disclose any help received and sources used.
- In an oral assessment, every student shall be able to present and answer questions about the entire assignment and solution.